Time : 3 Hrs. **TEST - 2** MM : 720

[PHYSICS]

Choose the correct answer :

1. In case of three vectors, which set of their magnitudes cannot have zero resultant?
   (1) 10, 20, 20 (2) 10, 20, 40
   (3) 10, 10, 10 (4) 10, 10, 20

2. The angle between $\vec{P}$ and $\vec{Q}$ is θ and $\vec{R} = \vec{P} + \vec{Q}$ makes an angle $\frac{\theta}{2}$ with $\vec{P}$. Which of the following is true?
   (1) $|\vec{P}||Q| = 1$ (2) $|\vec{P}| = |\vec{Q}|$
   (3) $|\vec{P}| = 2|\vec{Q}|$ (4) $2|\vec{P}| = |\vec{Q}|$

3. A body is projected with a velocity of 40 m/s. After 2 s it crosses a vertical pole of height 20.4 m. Angle of projection (g = 9.8 m/s^2) with horizontal is
   (1) 45º (2) 60º
   (3) 90º (4) 30º

4. When a vector $\vec{A}$ is multiplied with a number, then
   (1) Only direction may change
   (2) Only magnitude may change
   (3) Direction and magnitude may change
   (4) All of these

5. A particle is moving along x-axis with speed 10 m/s. An acceleration of 10 m/s^2 along y-axis is applied on the particle, then speed of particle just after 1 s is
   (1) $\frac{10}{\sqrt{2}}$ m/s (2) $10\sqrt{2}$ m/s
   (3) 10 m/s (4) 20 m/s

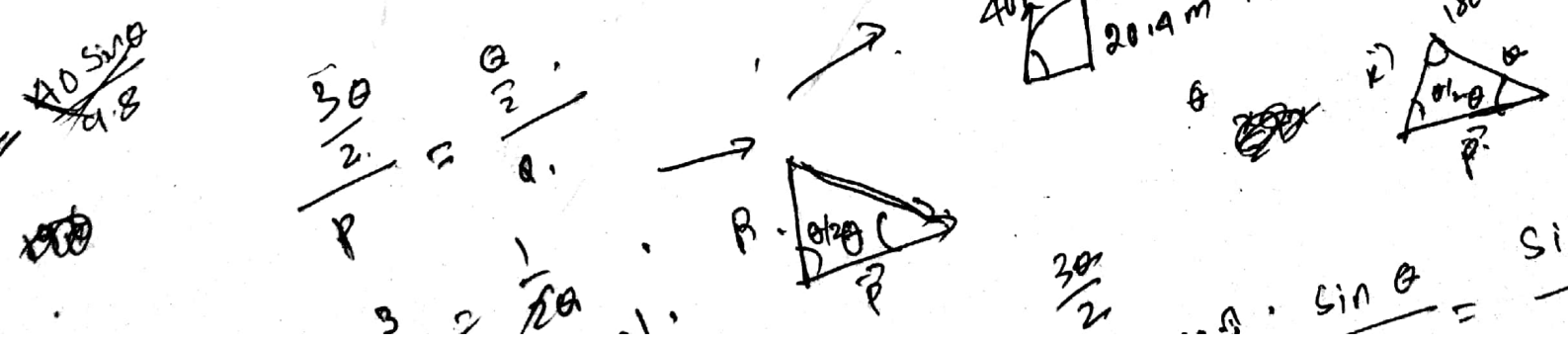
6. Angular velocity of minute hand of a standard watch (in rad/s) is
   (1) $\frac{\pi}{1800}$ (2) $\frac{\pi}{3600}$
   (3) $\frac{\pi}{60}$ (4) $\frac{\pi}{30}$

7. A particle leaves the origin with an initial velocity $\vec{u} = 3\hat{i}$ m/s and a constant acceleration $\vec{a} = \left(-\hat{i} - \frac{1}{2}\hat{j}\right)$ m/s^2. Its speed when its x - coordinate of position is maximum is
   (1) 6 m/s (2) 9 m/s
   (3) 3 m/s (4) $\frac{3}{2}$ m/s

8. For a particle in uniform circular motion, the velocity $\vec{v}$ at a point $P(R, \theta)$ on the circle of radius R is (Here θ is measured from the x-axis & v = speed o particle)
   (1) $v\cos\theta\hat{i} + v\sin\theta\hat{j}$ (2) $v\sin\theta\hat{i} + v\cos\theta\hat{j}$
   (3) $-v\sin\theta\hat{i} + v\cos\theta\hat{j}$ (4) $v\sin\theta\hat{i} - v\cos\theta\hat{j}$

9. The speed of revolution of particle going around circle is doubled and its angular speed is als doubled, then centripetal acceleration
   (1) Is halved
   (2) Remains unchanged
   (3) Is doubled
   (4) Becomes 4 times

Space for Rough Work



10. A particle is moving with velocity $\vec{v} = k(y\hat{i} + x\hat{j})$, where k is constant. The general equation of its path (c = constant) is

(1) $xy = c$ (2) $y = x^2 + c$

(3) $y^2 = x^2 + c$ (4) $y^2 = x + c$

11. A projectile can have the same range 'R' for two angles of projection. If t_1 and t_2 be the times of flight in the two cases, then the initial velocity of projectile is

(1) gt_1t_2 (2) $2gt_1t_2$

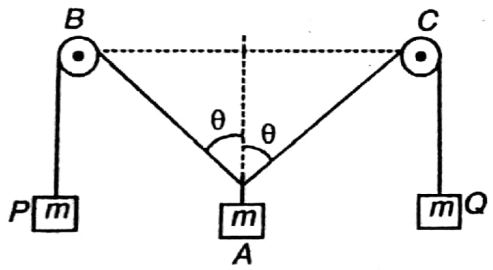
(3) $\frac{1}{2}g\left(t_1^2 + t_2^2\right)^{1/2}$ (4) $\frac{1}{4}g\left(t_1^2 + t_2^2\right)^{1/2}$

12. Two particles A and B having positions $\vec{r}_A = (3\hat{i} + 5\hat{j})$ m and $\vec{r}_B = (-5\hat{i} - 3\hat{j})$ m are moving with velocity $\vec{v}_A = (4\hat{i} + 3\hat{j})$ m/s and $\vec{v}_B = (8\hat{i} + a\hat{j})$. If they collide after 2 s, the value of a is

(1) 7 (2) 9

(3) 2 (4) 8

13. In the arrangement shown in figure, if block A comes down with speed v m/s then speed of P and Q blocks at this instant is



(1) $v\tan\theta$ (2) $\frac{v}{\cos\theta}$

(3) $v\sin\theta$ (4) $v\cos\theta$

14. A car A is moving westwards with a speed of 20 km/h and a car B 200 km south of A, is moving northwards with a speed by 20 km/h. Shortest distance between them is

(1) $100\sqrt{2}$ km (2) $50\sqrt{2}$ km

(3) 200 km (4) 100 km

15. A particle is projected with a speed u at angle 60° to the horizontal. The radius of curvature at the point when particle makes an angle 30° with horizontal is

(1) $\frac{u^2}{\sqrt{3}g}$ (2) $\frac{3u^2}{g}$

(3) $\frac{2u^2}{g}$ (4) $\frac{2u^2}{3\sqrt{3}g}$

16. A ball is projected at 45° above horizontal. It just clears a pole 4 m away and falls at a distance of 2 m from the foot of the pole on the other side. The height of the pole is

(1) 4 m (2) $\frac{4\text{m}}{3}$

(3) 6 m (4) $\frac{18}{3}$ m

17. From a tower of height 40 m, two bodies are simultaneously projected horizontally in opposite directions with velocities of 2 m/s and 8 m/s respectively. The horizontal distance between two bodies when their velocities are perpendicular to each other is

(1) 4 m (2) 8 m

(3) 1 m (4) 2 m

18. To a stationary man, rain appears to be falling at an angle 30° with vertical. If he starts running with speed v m/s, rain strikes him vertically, then speed of rain w.r.t. ground is

(1) $v\sqrt{3}$ m/s (2) $\frac{v\sqrt{3}}{2}$ m/s

(3) v m/s (4) $2v$ m/s

Space for Rough Work

19. A cart is moving horizontally along a straight line with a uniform velocity of 50 m/s. A ball is to be projected from this cart in such a way that it will return to it after it has moved 200 m. Initial speed of ball w.r.t. cart is (g = 9.8 m/s^2)

(1) 4.9 m/s (2) 39.2 m/s

(3) 9.8 m/s (4) 19.6 m/s

20. A particle is projected from ground with initial speed of 40 m/s at an angle 60° with horizontal. The average velocity of the particle between its point of projection and highest point is

(1) $20\sqrt{3}$ m/s (2) 10 m/s

(3) 20 m/s (4) $10\sqrt{7}$ m/s

21. A projectile is fired from the level ground at angle θ above the horizontal. Angle of elevation (ϕ) of highest point from point of projection is

(1) $\tan\phi = \frac{1}{2}\tan\theta$ (2) $\tan\phi = \frac{1}{4}\tan\theta$

(3) $\tan\phi = 2\tan\theta$ (4) $\tan\phi = \tan\theta$

22. At what angle with the vertical a ball be thrown so that the range R is related to time of flight T as $R = 5T^2$

(1) θ = 60° (2) θ = 30°

(3) θ = 45° (4) θ = 90°

23. A particle is projected with velocity 10 m/s making an angle 60° with the horizontal. What is change in speed when it is at the highest point?

(1) 10 m/s (2) 3 m/s

(3) $5\sqrt{3}$ m/s (4) 5 m/s

24. A swimmer wishes to cross a river $\frac{1}{2}$ km wide flowing at 5 km/h. If speed of swimmer w.r.t. still water is 3 km/h and crosses the river in shortest time then displacement of swimmer between both the banks is

(1) $\frac{\sqrt{34}}{6}$ km (2) $\frac{9}{6}$ km

(3) $\frac{1}{2}$ km (4) $\frac{1}{6}$ km

25. Car A is travelling with a velocity of 5 km/h due east. The second car B is heading 30° east of north. Speed of car B such that it remains always due north w.r.t. car A is

(1) 8 km/h (2) 7 km/h

(3) 10 km/h (4) 9 km/h

26. A particle is thrown with velocity u making an angle θ with horizontal. It just crosses the top of two poles each of height h after 1s and 3s respectively. Maximum height of projectile is (g = 10 m/s^2)

(1) 60 m (2) 90 m

(3) 20 m (4) 30 m

27. A bullet fired at angle 30° with horizontal hits the ground 3 m away. What can be the approximate maximum range of this projectile?

(1) 4.2 m (2) 5.0 m

(3) 3.0 m (4) 3.5 m

28. The acceleration vector of a particle in uniform circular motion averaged over one cycle

(1) Is a unit vector

(2) Is a null vector

(3) Has some magnitude and directed towards the centre

(4) Both (1) & (3)

29. If a particle is projected with a velocity u so that its horizontal range is thrice the greatest height attained, then its horizontal range is

(1) $\frac{4u^2}{5g}$ (2) $\frac{25u^2}{24g}$

(3) $\frac{24u^2}{25g}$ (4) $\frac{5u^2}{g}$

Space for Rough Work

30. In case of uniform circular motion, position of particle varies as $\vec{r} = a\cos\omega t\hat{i} + a\sin\omega t\hat{j}$. Then
(1) Speed of particle is $a\omega$
(2) Acceleration of particle is $-\omega^2 a$
(3) Acceleration is perpendicular to motion of particle
(4) All of these

31. Two particles of equal masses are revolving in a circle of radius r_1 and r_2. If they complete one revolution in equal time, then ratio of their angular velocities is
(1) 1 : 1 (2) $r_1^2 : r_2^2$
(3) $r_1 : r_2$ (4) $r_2 : r_1$

32. A projectile is projected from ground with initial velocity $(u_0\hat{i} + v_0\hat{j})$ m/s. If acceleration due to gravity is $\vec{a} = -g\hat{j}$, then maximum vertical displacement for maximum horizontal displacement is
(1) $\frac{v_0^2}{2g}$ (2) $\frac{(u_0^2 + v_0^2)}{4g}$
(3) $\frac{v_0^2}{g}$ (4) $\frac{(u_0^2 + v_0^2)}{g}$

33. If two particles are projected simultaneously with different speeds from same point with different angles of projection, then correct statement is that their relative
(1) Acceleration is zero
(2) Velocity along horizontal direction is constant
(3) Velocity is constant
(4) All of these

34. An aeroplane is flying horizontally with constant speed. A ball is dropped from aeroplane. Its path will be parabolic w.r.t.
(1) Observer at ground
(2) Observer in aeroplane
(3) Both the observers
(4) Path does not depend upon observer

35. A particle A is dropped from a height. Another particles B is projected in horizontal direction simultaneously with speed of 10 m/s from same height, then correct statement is
(1) Particles B strikes with greater speed than A
(2) Particles A and B have same vertical striking velocities
(3) Particles A and B strike ground at same time
(4) All of these

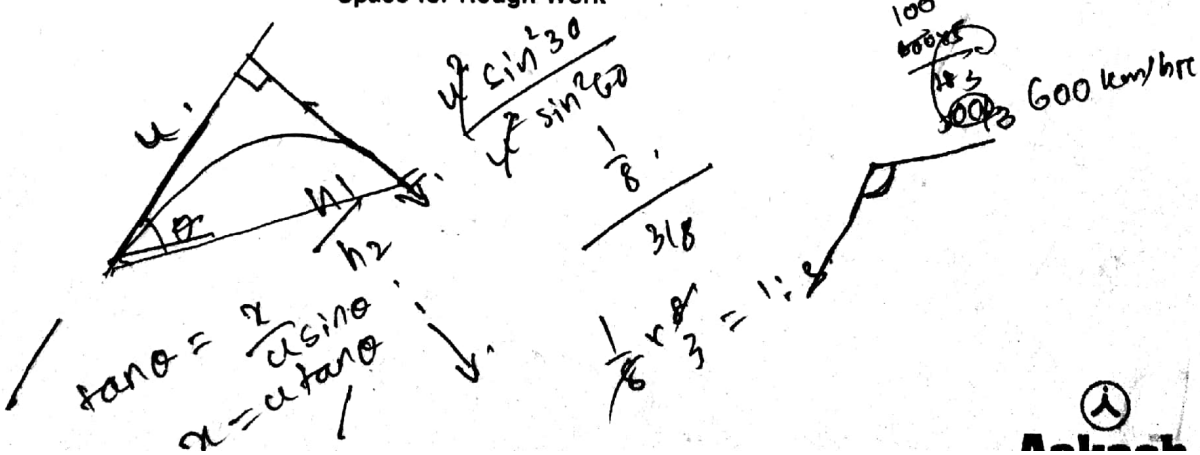
36. A particle is projected with speed u at an angle θ with horizontal. In its parabolic path at a point, particle is moving at right angle to initial direction of projection. Its velocity at that point is
(1) $u\cos\theta$ (2) $u\,\text{cosec}\theta$
(3) $u\tan\theta$ (4) $u\cot\theta$

37. Two projectiles are projected with the same speed. If one is projected at an angle of 30° and the other at 60° to the horizontal, then the ratio of maximum heights is
(1) 1 : 3 (2) 1 : 4
(3) 3 : 1 (4) 2 : 1

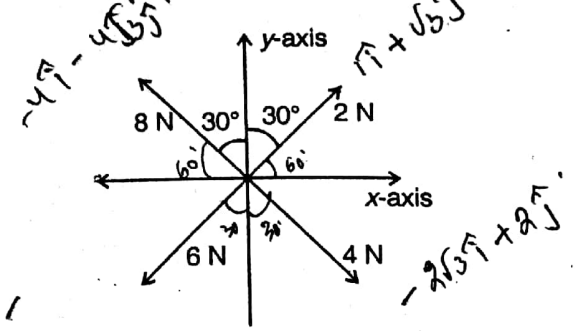
38. A projectile is thrown up with initial speed u making angle θ with the horizontal ($\theta > 45°$). Time just after which it will be moving perpendicular to its initial direction of motion is
(1) $\frac{u}{g\cos\theta}$ (2) $\frac{u\cos\theta}{g}$
(3) $\frac{u}{g\sin\theta}$ (4) $\frac{u\sin\theta}{g}$

39. An aeroplane is flying at constant height of 1.96 km with speed 600 km/h towards a point directly over a target. At what angle of sight should it release a bomb if it is to strike the target on the ground?
(1) 0° (2) 60°
(3) 75° (4) 45°

Space for Rough Work



40. Four forces are acting on a body as shown in figure, then resultant force is of



(1) 4 N directed towards $(-x)$ -axis
(2) 10 N towards $(+y)$-axis
(3) 10 N directed towards $(-x)$-axis
(4) $4\sqrt{3}$ N directed towards $(+y)$-axis

41. Three vectors $\vec{A}, \vec{B}$ and $\vec{C}$ are such that $\vec{A} = \vec{B} + \vec{C}$ and their magnitudes are in ratio 10 : 8 : 6 respectively, then angle between $\vec{A}$ and $\vec{B}$ is
(1) 90° (2) 45°
(3) 53° (4) 37°

42. If a body is moving uniformly on a circle with speed v, then the magnitude of change in its velocity when it has turned by an angle θ is
(1) $2v\sin\theta$ (2) $2v\sin(\theta/2)$
(3) $2v\cos(\theta/2)$ (4) $2v\cos\theta$

43. If sum of two vectors is equal to their difference then
(1) Both the vectors are equal
(2) Both the vectors are unit vector
(3) One of the vectors is null vector
(4) All of these

44. The sum of two vectors is 18 unit and smaller one has magnitude 5 unit. If the resultant is at 90° with smaller vector then magnitude of their resultant is
(1) 10 unit (2) 2 unit
(3) 13 unit (4) 12 unit

45. If vector $\vec{B}$ is added to $\vec{A}$ the resultant is $(6\hat{i} + 1\hat{j})$. If $\vec{B}$ is subtracted from $\vec{A}$, the resultant is $(-4\hat{i} + 7\hat{j})$, then magnitude of $\vec{A}$ is
(1) 8.2 (2) 2.0
(3) 4.1 (4) 3.2

[CHEMISTRY]

46. Most electropositive among halogens is
(1) Br (2) I
(3) F (4) Cl

47. First ionisation energy of Mg is
(1) Equal to Al (2) Zero
(3) More than Al (4) Less than Al

48. Long form of periodic table consists of
(1) 7 groups and 18 periods
(2) 7 periods and 8 groups
(3) 7 periods and 18 groups
(4) 6 periods and 7 groups

49. Particle nature of electron was experimentally demonstrated by
(1) J. J. Thomson
(2) Max Planck
(3) de-Broglie
(4) Davisson

50. $1s^2\ 2s^2\ 2p^5\ 3s^1$ represents
(1) Excited state of fluorine
(2) Excited state of sodium
(3) Excited state of neon
(4) Ground state of fluorine

Space for Rough Work

51. First IE of Li is 5.4 eV atom^{-1} and electron affinity of Cl is 3.61 eV atom^{-1}. What is ΔH for the following reaction (in eV atom^{-1})?

$Li(g) + Cl(g) \rightarrow Li^+(g) + Cl^-(g)$

(Resulting ions do not combine)

(1) 1.79 (2) 9.01

(3) 170 (4) 172.4

52. The order of screening effect of electrons of *s*, *p*, *d* and *f* orbitals of a given shell of an atom on its outer shell electrons is

(1) $p < d < s > f$ (2) $f > p > s > d$

(3) $s > p > d > f$ (4) $f > d > p > s$

53. Nature of three oxides formed by A, B and C is acidic, basic and amphoteric. Give the sequence of their electronegativity

(1) C > B > A (2) B > A > C

(3) A > C > B (4) A > B > C

54. The number of naturally occurring *p*-block elements, that are diamagnetic is

(1) 7 (2) 6

(3) 11 (4) 5

55. When a neutral atom is converted to cation, there is

(1) A decrease in atomic number

(2) A decrease in mass number

(3) A decrease in size

(4) An increase in size

56. Calculate the wavelength of a photon having momentum 3.0×10^{-23} kg ms^{-1}

(1) 3.2×10^{-23} cm (2) 3.2×10^{-12} cm

(3) 2.2×10^{-11} cm (4) 2.2×10^{-9} cm

57. Find out the false statement

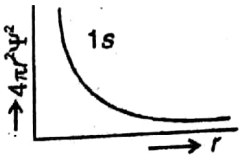
(1) Number of peaks in radial distribution curve is $n - \ell$

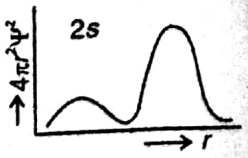
(2) A spectral line will be seen for $2p_x - 2p_z$ transition

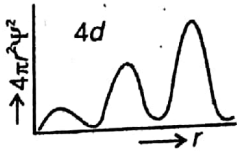
(3) NO_2^- and O_3 are isosteres

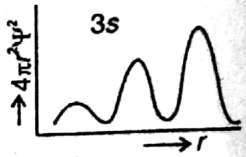
(4) N^{3-}, F^- and Na^+ are isoelectronic species

58. Which one of the following does not represent a right graph of radial distribution function versus distance r from nucleus?

A. 

B. 

C. 

D. 

(1) A, C & D (2) C only

(3) A & C (4) A only

59. How many electrons in ground state of sodium possess m = 0?

(1) 8 (2) 9

(3) 6 (4) 7

60. How many set of quantum numbers will be there in an atom, which contains total six electrons?

(1) 3 (2) 12

(3) 6 (4) 4

61. de-Broglie wavelength will _____ times, if KE of photon is decreased 16 times

(1) 4 times (2) 16 times

(3) $\frac{1}{4}$ times (4) $\frac{1}{16}$ times

62. An electron in an atom jumps in such a way that its kinetic energy changes from E to $\frac{E}{4}$. Calculate the change in potential energy

(1) $-\frac{3}{2}E$ (2) $-\frac{3}{4}E$

(3) $+\frac{3}{2}E$ (4) $+\frac{3}{4}E$

Space for Rough Work

63. *s* electrons in Ne are same in number as
(1) *p* electrons in O (2) *d* electrons in Fe^{3+}
(3) *d* electrons in Cr (4) All of these

64. Symbol of element with atomic number 102 is
(1) Uub (2) Ubn
(3) Unb (4) Und

65. Which of the following set of elements does not belong to the same group, but resemble in properties?
(1) Li and Mg (2) Be and Al
(3) B and Si (4) All of these

66. Which of the following sequences contains atomic number of only representative elements?
(1) 7, 17, 25, 37, 48 (2) 10, 35, 57, 88
(3) 3, 33, 53, 87 (4) 2, 10, 22, 36

67. CO and NO are
(1) Neutral oxides
(2) Acidic oxides
(3) Basic oxides
(4) Neutral and basic respectively

68. In atomic volume curve of Lothar Meyer ascending portions are occupied by
(1) Transition elements (2) Halogens
(3) Alkali metals (4) Alkaline earth metals

69. Electronic configuration of element with atomic number 117 will be
(1) $[Rn]7s^2\ 7p^6\ 6d^{10}\ 5f^{13}$
(2) $[Rn]5f^1\ 6d^{10}\ 7s^2\ 7p^6$
(3) $[Rn]5f^{14}\ 6d^{10}\ 7s^2\ 7p^5$
(4) $[Rn]5f^{14}\ 7s^2\ 7p^6\ 6d^9$

70. Among group 16 elements, electron gain enthalpy of which is least negative?
(1) Se (2) Te
(3) O (4) S

71. Covalency of Al in $[AlCl(H_2O)_5]^{2+}$ is
(1) 5 (2) 6
(3) 2 (4) 3

72. The formula of oxide of metal whose successive ionisation enthalpies are 10, 20, 50, 2000 kJ mol^{-1} respectively
(1) MO (2) MO_2
(3) M_2O (4) M_2O_3

73. If the deBroglie wavelength of a particle of mass '*m*' is four times its velocity, then wavelength and velocity of particle will be respectively
(1) $\sqrt{\frac{2h}{m}}, \sqrt{\frac{h}{2m}}$ (2) $\frac{1}{4}\sqrt{\frac{h}{m}}, 4\sqrt{\frac{h}{m}}$
(3) $2\sqrt{\frac{h}{m}}, \frac{1}{2}\sqrt{\frac{h}{m}}$ (4) $\frac{1}{2}\sqrt{\frac{h}{m}}, 2\sqrt{\frac{h}{m}}$

74. The radius of which of the following orbit is same as that of second Bohr's orbit of hydrogen atom?
(1) Li^{2+} (n = 3) (2) He^+ (n = 2)
(3) He^+ (n = 4) (4) Be^{3+} (n = 4)

75. Which of the following orbitals possess zero electron density in XY plane?
(1) d_{z^2} (2) p_z
(3) $d_{x^2-y^2}$ (4) Both (1) & (2)

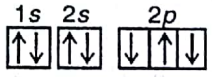
76. Which of the given statements is correct?
(1) The elements in which e^- are filled in 4f orbitals called lanthanoids.
(2) The properties of elements are periodic function of atomic number.
(3) Non metallic elements are less in number than metallic elements
(4) All are correct

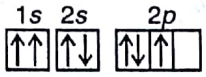
77. Maximum number of elements which can be placed in 7th period
(1) 50 (2) 86
(3) 18 (4) 32

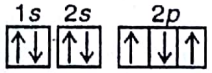
Space for Rough Work

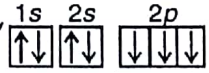
78. Among the equations given below, ΔH of which one is equal to IE_1 of Ba
(1) $Ba(s) \rightarrow Ba^{+}(g) + e^{-}$
(2) $Ba(g) \rightarrow Ba^{+2}(g) + 2e^{-}$
(3) $Ba(g) + e^{-} \rightarrow Ba^{-}(g)$
(4) $Ba(g) \rightarrow Ba^{+}(g) + e^{-}$

79. Which of the following is false?
(1) There is one nodal plane in p_x orbital
(2) $2p_x$, $2p_y$ and $2p_z$ orbitals have identical shapes but different orientation in space
(3) The electron density in the XY plane in $3d_{x^2-y^2}$ orbital is zero
(4) Ψ^2 = orbital

80. Ground state electronic configuration of nitrogen atom can be best represented by
(1) 

(2) 

(3) 

(4) 

81. Number of waves made by Bohr electron in one complete revolution in 3rd orbit is
(1) 3 (2) 4
(3) 1 (4) 2

82. An element with E.C. $[Xe]\ 4f^{14}\ 5d^{7}\ 6s^{2}$ belongs to
(1) 7th group (2) 5th period
(3) 7th period (4) 9th group

83. Find out the wave number of electromagnetic radiations emitted during transition of electron between two levels of He^{+} ion, whose sum is 4 and difference is 2
(1) $\frac{9R}{8}$ (2) $\frac{3R}{4}$
(3) $\frac{32R}{9}$ (4) $\frac{8R}{9}$

84. Positive electron gain enthalpy is shown by
(1) Ne (2) O^{-}
(3) F (4) Both (1) & (2)

85. Which of the following valence shell electronic configuration is representing most electronegative element?
(1) $2s^2 2p^5$ (2) $2s^2 2p^6$
(3) $2s^2 2p^3$ (4) $2s^2 2p^4$

86. Isotone of $^{31}_{15}P$ is
(1) $^{27}_{13}Al$ (2) $^{32}_{16}S$
(3) $^{32}_{15}P$ (4) $^{33}_{16}S$

87. According to Bohr's model, which of the following is not correct?
(1) Energy of electron is taken negative
(2) Bohr's theory failed for the He atom
(3) The electron revolves in different orbits with different speeds
(4) The electrons emit energy during revolution due to force of attraction

88. Electronic configuration of anion in sodium hydride will be
(1) $1s^0$ (2) $1s^1\ 2s^1$
(3) $1s^2$ (4) $1s^1$

89. The angular momentum of electron in the orbit whose highest magnetic quantum number is 2.
(1) $\frac{\pi}{2h}$ (2) $\frac{2h}{\pi}$
(3) $\frac{1.5\,h}{\pi}$ (4) $\frac{h}{\pi}$

90. How much energy is required to excite the electron from $n_1 = 1$ to $n_2 = 2$ in H atom?
[Given: IE of hydrogen atom is $1.312 \times 10^6\ J\,mol^{-1}$]
(1) $7.56 \times 10^5\ J\ mol^{-1}$ (2) $5.56 \times 10^5\ J\ mol^{-1}$
(3) $3.28 \times 10^5\ J\ mol^{-1}$ (4) $9.84 \times 10^5\ J\ mol^{-1}$

Space for Rough Work

[BIOLOGY]

91. Which of the following is **not** correct w.r.t protozoans?
(1) *Plasmodium* is most notorious protozoan
(2) All protozoans are parasites.
(3) They are believed to be primitive relatives of animals.
(4) Some marine forms have silica shells

92. Which of the following is coprophilous fungi?
(1) *Peziza*, *Albugo*
(2) *Penicillium*, *Puccinia*
(3) *Mucor*, *Peziza*
(4) Mushroom, *Ustilago*

93. Select the wrong statement w.r.t. lichens.
(1) They play important role during ecological succession
(2) The mycobiont usually belongs to class phycomycetes
(3) Lichens do not grow in SO_2 polluted area
(4) They are symbiotic association

94. Consider the following statements w.r.t. virus and select the right choice.
(a) The genetic material is infectious
(b) Capsid protects the nucleic acid
(c) The capsomeres are always arranged in helical geometric forms
(d) They are inert outside their specific host cell.
(1) (b), (c) & (d) are correct
(2) (a) & (c) are correct
(3) (a), (b) & (d) are incorrect
(4) Only (c) is incorrect

95. In how many of the organisms, given in box, asexual spores are conidia produced exogenously on the special hyphae called conidiophore?

Rhizopus, *Penicillium*, *Lycoperdon*, *Aspergillus*, *Neurospora*

(1) 4 (2) 2
(3) 5 (4) 3

96. Read the following statements:
(a) In diatoms, the siliceous cell wall form two thin overlapping shells
(b) Diatoms are microscopic and float actively in water currents
(1) Only (b) is incorrect
(2) Both (a) & (b) are incorrect
(3) Only (a) is incorrect
(4) Only (a) & (b) are correct

97. The mutually beneficial association of a mycobiont and root of higher plants is termed as mycorrhiza. The mycorrhiza that do not form Hartig net are characterised by
(1) Formation of wooly covering on external surface of the root
(2) Formation of vesicles and arbuscules
(3) Members of basidiomycetes as fungal partner
(4) More than one option is correct

98. Find the incorrectly matched pair:
(1) Paraflagellar body – *Euglena*
(2) Dikaryophase – *Mucor*
(3) Pseudoplasmodium – *Dictyostelium*
(4) Myxamoebae – *Physarum*

Space for Rough Work

99. Mark the **correct** statement (w.r.t. virusoids)
(1) Replicate within the host and do not cause any infection
(2) Causes laughing death disease in humans
(3) Satellite DNA present inside the capsid of other smaller virus
(4) Discovered by Alper

100. Select the **incorrect** statement concerned with life cycle of communal slime moulds.
(1) Sexual reproduction is anisogamous type
(2) Spores are formed after meiosis
(3) Pseudoplasmodium exhibits primitive form of multicellularity and division of labour
(4) No motile stage in life cycle.

101. Proteinaceous infectious particles cause all of the following diseases, except
(1) Scrapie
(2) Bovine spongiform encephalopathy
(3) Creutz Feldt Jakob
(4) Citrus exocortis

102. Which of the following statements is correctly associated with euglenoids?
(1) Contractile vacuole helps in osmoregulation
(2) They usually reproduce by transverse binary fission
(3) They behave like heterotrophs by predating on smaller organisms in presence of light
(4) Few of them are fresh water organisms

103. Viruses that infect animals usually have
(1) dsRNA (2) ssDNA
(3) ssRNA (4) dsDNA

104. Sporangiospores produced in *Mucor* are
(1) Endogenous, diploid, mitospores
(2) Exogenous, thin, meiospores
(3) Endogenous, haploid, mitospores
(4) Exogenous, haploid, mitospores

105. Select the correct match

Column I	Column II
a. Toad stools	(i) *Amoeba*
b. Chief producers in oceans	(ii) *Amanita*
c. False feet	(iii) *Physarum*
d. Swarm cells	(iv) Diatoms

(1) a(ii), b(iv), c(i), d(iii)
(2) a(ii), b(i), c(iv), d(iii)
(3) a(i), b(ii), c(iii), d(iv)
(4) a(i), b(iii), c(ii), d(iv)

106. During unfavourable conditions, the plasmodium of slime moulds differentiates and forms fruiting bodies bearing
(1) Non-motile spores without wall
(2) Non-motile spores with cellulosic wall
(3) Motile spores with cellulosic wall
(4) Non-motile spores with chitinous wall

107. Which of the following feature form the basis for the division of the kingdom fungi into various classes?
(a) Mode of nutrition
(b) Mode of spore formation
(c) Morphology of mycelium
(d) Type of photosynthetic pigments
Mark the correct option
(1) (a) & (b) (2) (a) & (c)
(3) (c) & (d) (4) (b) & (c)

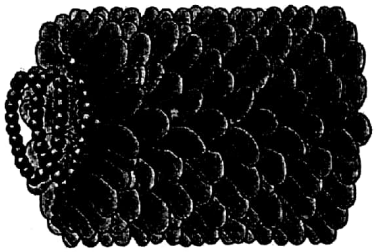
Space for Rough Work

108. The well known famine in Ireland has been attributed mainly to the failure of the potato crop which was infected by
(1) *Phytophthora palmivora*
(2) *Alternaria solani*
(3) *Phytophthora infestans*
(4) More than one option is correct

109. From the given below chart, choose the **correct** match (Where + is present, – is absent)

	Organism	Pellicle	Flagella	Contractile vacuole
(1)	*Trypanosoma*	+	–	–
(2)	*Leishmania*	–	–	–
(3)	*Entamoeba*	+	+	–
(4)	*Plasmodium*	+	–	–

110. Given below is the diagram of a virus. Which one of the following statements is **incorrect** for this organism?



(1) It is obligate intracellular parasite
(2) It was discovered by D.J. Ivanowsky
(3) 2130 capsomeres are arranged helically to form the capsid
(4) It cannot pass through bacterial filter

111. Select the correct statement w.r.t Diatoms
(1) Possess flagella during reproductive stage
(2) Possess peripheral cytoplasm
(3) Reserve food is leucosin
(4) More than one option is correct

112. Ergot of rye is caused by
(1) *Candida albicans* (2) *Aspergillus niger*
(3) *Claviceps purpurea* (4) *Ustilago nuda*

113. In which one of the following pairs of organisms asexual spores are absent?
(1) *Ustilago*, *Agaricus*
(2) *Rhizopus*, *Phytophthora*
(3) *Colletotrichum*, *Mucor*
(4) *Alternaria*, *Claviceps*

114. Which of the following is **not** a fungal disease?
(1) Yellow rust (2) White rust
(3) Citrus canker (4) Brown rust

115. Photosynthetic pigments of _____ are identical to those present in higher plants.
(1) Diatoms (2) Slime moulds
(3) *Euglena* (4) *Gonyaulax*

116. Cell wall of dinoflagellates is made up of stiff plates possessing
(1) Silica + Cellulose
(2) Cellulose + Pectin
(3) Silica + Protein
(4) Cellulose + Lipids

117. Match the storage products listed under Column-I with the organisms given under Column-II ; Choose the appropriate option from the given choices.

	Column I		Column II
a.	Chrysolaminarin	(i)	Euglenoids
b.	β 1, 3 glucan	(ii)	Diatoms
c.	Glycogen and oil	(iii)	Dinoflagellates
d.	Starch	(iv)	Imperfect fungi

(1) a(ii), b(i), c(iv), d(iii) (2) a(ii), b(iii), c(iv), d(i)
(3) a(ii), b(iv), c(iii), d(i) (4) a(i), b(ii), c(iii), d(iv)

Space for Rough Work

118. Which of the following is **Incorrect** for viroids?
(1) Pathogens of plants
(2) Infectious DNA particles
(3) Genome of viroid has low molecular weight
(4) Lack protein coat that is found in viruses

119. In basidiomycetes
(1) Mycelium is branched and aseptate
(2) Dikaryotic structure ultimately gives rise to basidium
(3) Sex organs are absent
(4) More than one option is correct

120. Select the **mismatched** column w.r.t fungus characteristics

Characteristics		Fungal group
(1) Only asexual or vegetative stage	–	Deuteromycetes
(2) Asexual exogenous spores	–	Basidiomycetes
(3) Intervening dikaryotic stage	–	Ascomycetes
(4) They may grow on decaying wood	–	Phycomycetes

121. Among *Puccinia*, *Ustilago* and Mushroom all the three
(1) Bear sexual exospores
(2) Lack perfect stage
(3) Bear ascospores
(4) Bear sexual endospores

122. Which of the following pairs is wrongly matched?
(1) *Neurospora* – Ascocarp
(2) Slime mould – Conidia
(3) Viroids – RNA
(4) *Euglena* – Pellicle

123. Select the correct option w.r.t. fungi forms fruiting body in which reduction division occurs
(1) *Penicillium*, *Agaricus* and *Claviceps*
(2) *Claviceps*, *Mucor* and *Rhizopus*
(3) *Agaricus*, *Aspergillus* and *Alternaria*
(4) *Peziza*, *Saprolegnia* and *Trichoderma*

124. Which of the following structures is **not** associated with the life cycle of *Rhizopus*?
(1) Columella (2) Spawn
(3) Promycelium (4) Sporangiospore

125. Phycomycetes are identified with all of these, except
(1) The mycelium is septate and coenocytic
(2) They may found in aquatic habitats
(3) Some common parasitic forms are *Phytophthora* and *Albugo*
(4) Asexual reproduction takes place by aplanospores and zoospores

126. Find odd one (w.r.t noncellular organisms that are characterised by having inert crystalline structure outside the living cell)
(1) *Yersinia* (2) TNV
(3) H_1N_1 (4) λ-phage

127. Select the correct match.

Column I	Column II
a. Capsomere	(i) Viroids
b. Tail fibre	(ii) TMV
c. PSTD	(iii) T_2-Bacteriophage
d. ssDNA virus	(iv) Coliphage ϕ x 174

(1) a(ii), b(iv), c(i), d(iii) (2) a(i), b(iv), c(ii), d(iii)
(3) a(i), b(iii), c(iv), d(ii) (4) a(ii), b(iii), c(i), d(iv)

128. Viruses cause diseases like
(1) Jaundice, Yellow fever, Influenza and AIDS
(2) AIDS, Influenza, Dengue and Diphtheria
(3) Mumps, Herpes, Plague and Influenza
(4) Herpes, Dengue, Yellow fever and Plague

Space for Rough Work

129. Match the following.

Column I	Column II
a. Smut fungi	(i) *Rhizopus*
b. Rust fungi	(ii) *Mucor*
c. Pin mould	(iii) *Puccinia*
d. Pink mould	(iv) *Ustilago*
	(v) *Neurospora*

(1) a(iv), b(iii), c(v), d(i) (2) a(ii), b(iii), c(i), d(v)
(3) a(iv), b(iii), c(ii), d(v) (4) a(iv), b(v), c(ii), d(iii)

130. Which of the following features is correct for all the protistans?
(1) Primitive relative of animals
(2) Presence of 80 S ribosomes
(3) Parasites
(4) Absence of cell wall

131. Choose the **correct** match w.r.t. genetic meterial

Viruses	Genetic material
(1) Ebola virus, Dengue virus, Yellow fever virus	– ssRNA
(2) Hepatitis B virus, Harpes virus, Polio virus	– ssDNA
(3) Reo virus, Rhino virus, Rabies virus	– dsRNA
(4) Measles virus, Mumps virus, Smallpox virus	– dsDNA

132. Read the following statements w.r.t fungi and select the correct option.
(a) They constitute a unique kingdom of heterotrophic organisms.
(b) They can live as symbionts.
(c) Fungi can fix nitrogen in the roots of higher plants
(d) Fungi may cause orange rot disease.
(1) (a) & (b) are incorrect
(2) Only (c) is incorrect
(3) Only (a) & (b) are correct
(4) Only (d) is incorrect

133. How many organisms in the list given below are parasitic fungi?

Albugo, Ustilago, Phytophthora, Agaricus, Colletotrichum, Pythium

(1) Four (2) Three
(3) Six (4) Five

134. Which of the following pairs is **wrongly** matched?
(1) *Claviceps* – Cellulosic wall
(2) *Amanita* – Secondary mycelia
(3) *Agaricus* – Hymenium in basidiocarp
(4) *Mucor* – Coenocytic hyphae

135. Which one of the following organisms is correctly matched with its three characteristics?
(1) *Rhizopus* – Sporangiospores, Oogamous, Bread mould
(2) *Alternaria* – Conidia, Septate mycelia, Chitinous wall
(3) *Puccinia* – Parasites, Dolipore septa, Basidiocarp
(4) *Aspergillus* – Ascocarp, Parasites, Unbranched mycelia

136. Which feature is not true for vertebrates?
(1) They have ventral muscular myogenic heart
(2) They always have two pairs of limbs
(3) They all are chordates
(4) They have kidneys for excretion and osmoregulation

137. Which character exists universally in all mammals?
(a) Presence of hair on body
(b) Presence of 12 pairs of cranial nerves
(c) Presence of muscular diaphragm
(d) Presence of left systemic arch
(e) Presence of pinna and tympanum
(1) (c), (d) & (e) (2) (b), (d) & (e)
(3) (a), (c) & (e) (4) (b), (c) & (d)

Space for Rough Work

138. Find out the members belonging to most primitive group of mammals
(1) *Macropus*, *Opossum*
(2) *Delphinus*, *Balaenoptera*
(3) *Canis*, *Felis*
(4) *Tachyglossus*, *Ornithorhynchus*

139. Which of the following is not the correct description of organism illustrated in figure?

(1)  – Has prehensile tail Show camouflaging

(2)  – Homeotherm, Fertilization internal

(3)  – Have cloaca, Tympanum present

(4)  – Unisexual, Fertilization external

140. Which fish have to swim constantly to avoid sinking?
(1) *Clarias* (2) *Hippocampus*
(3) *Carcharodon* (4) *Labeo*

141. Mark the organisms in which vertebral column is cartilaginous.
(a) Sting ray
(b) Saw fish
(c) Flying fish
(d) Hagfish
(e) Salamander
(f) Toad
(1) (d), (e) & (f) (2) (a), (b) & (d)
(3) (a), (b) & (c) (4) (b), (c) & (d)

142. Which of the following fish remove nitrogenous waste in the form of urea?
(1) *Exocoetus* (2) *Labeo*
(3) *Scoliodon* (4) *Hippocampus*

143. Identify the strict avian feature
(1) Nucleated RBC
(2) Have only right systemic arch
(3) Vascular lungs
(4) Warm blooded/homeotherms

144. Which vertebrates have dicondylic skull, 10 pairs of cranial nerves, arteriovenous heart and two systemic arches?
(1) Reptiles (2) Aves
(3) Pisces (4) Amphibians

145. Which chordate feature does not obliterate in retrogression of tadpole of urochordate?
(1) Dorsal hollow nerve cord
(2) Notochord
(3) Post anal tail
(4) Gill slits

146. Placoid scales in chondrichthyes are homologous to
(1) Teeth (2) Tail
(3) Paired fins (4) Unpaired fins

147. The life cycle of *Petromyzon* begins and ends in

	Begin		End
(1)	Fresh water	–	Fresh water
(2)	Sea water	–	Fresh water
(3)	Fresh water	–	Sea water
(4)	Sea water	–	Sea water

Space for Rough Work

148. Following are organisms with the character they possess. Mark the odd one

(1) *Draco* – Have patagia for flying

(2) *Ornithorhynchus* – Only poisonous mammal

(3) *Trygon* – Generate electric current to paralyse the prey

(4) *Heloderma* – Only poisonous lizard

149. Mark the marine bird having paddle like wings, cannot fly and lay eggs in ice.

(1) *Neophron* (2) *Aptenodytes*

(3) *Rhea* (4) *Apteryx*

150. Bony fish detects objects at a distance by movement of water current. What adaptation of these fishes allow them to do so?

(1) Swim bladder

(2) Lateral line sense organ

(3) Fins

(4) Operculum

151. The most advance character in crocodiles is the presence of

(1) Powerful dentition

(2) Powerful jaws

(3) Leathery eggs

(4) Four chambered heart

152. Find the character which reptiles share with birds and mammals

(1) Seven cervical vertebrae

(2) Amniotes

(3) Homeothermic

(4) Diaphragm

153. Which of the following important features make the reptiles truly land animals?

(1) Development of internal fertilization and amnion

(2) Development of cleidoic eggs and long gestation

(3) Development of ribs and pulmonary respiration

(4) Development of chorion and allantois

154. Which is/are not true statements?

(a) *Ichthyophis* is limbless, oviparous amphibian.

(b) Whales are largest fish known

(c) *Pavo cristatus* is national bird of India

(d) Glass snake is limbless reptile

(1) (b) only (2) (a) & (d)

(3) (a) & (b) (4) (b) & (d)

155. Pneumatic bones are characteristic of

(1) Birds (2) Bats

(3) Flying fish (4) All of these

156. Mark the chordate that retains the basic chordate character throughout its life

(1) *Herdmania*

(2) *Ascidia*

(3) *Balanoglossus*

(4) *Branchiostoma*

157. Which of the following character is not related to given organism?

(1) Well developed stomach

(2) Two chambered heart

(3) Presence of unpaired fins

(4) Circular and jawless mouth

Space for Rough Work

158. In which category of gland, secretory cell mature, rupture and becomes the secretory product?

	Type		Example
(1)	Holocrine gland	–	Sebaceous gland
(2)	Exocrine gland	–	Salivary gland
(3)	Apocrine gland	–	Mammary gland
(4)	Merocrine gland	–	Pancreas

159. The nature of articular cartilage present between joints of movable bones is

(1) Calcified cartilage
(2) Hyaline cartilage
(3) White fibrous cartilage
(4) Yellow elastic fibrocartilage

160. By 20-25 years of age, red bone marrow exists in the following parts, except

(1) Cranial bones (2) Middle part of femur
(3) Vertebrae (4) Sternum

161. Notochord in chordates is

	A	B	C
(1)	Hollow	Ectodermal origin	Dorsal to gut
(2)	Solid	Ectodermal origin	Dorsal to solid nerve cord
(3)	Solid	Mesodermal origin	Ventral to nerve cord
(4)	Hollow	Mesodermal origin	Ventral to nerve cord

162. Arrange the taxonomic feature, in ascending order w.r.t. *Hyla*

(a) Tetrapoda
(b) Amphibian
(c) Gnathostomata
(d) Vertebrate
(e) Chordata

(1) (e), (c), (d), (b), (a)
(2) (b), (d), (c), (a), (e)
(3) (b), (a), (c), (d), (e)
(4) (e), (d), (c), (a), (b)

163. Amniotic eggs evolved mainly to

(1) Prevent embryo from dessication
(2) Regulate temperature of embryo till its hypothalamus develop
(3) Protect eggs from predators
(4) Provide nourishment to the alecithal eggs

164. Find the odd one

(1)	*Ornithorhynchus*	–	Duck billed platypus
(2)	*Aptenodytes*	–	Flying fox
(3)	*Balaenoptera*	–	Blue whale
(4)	*Macropus*	–	Kangaroo

165. Syncytial condition is found in

(1) Cardiac muscle fibre
(2) Neurons
(3) Smooth muscle fibre
(4) Skeletal muscle fibre

166. Which of the following structures have similar type of tissue?

(1) PCT, ileum
(2) Mesothelium, inner lining of trachea
(3) Skin epidermis, cornea
(4) Inner lining of fallopian tubes, ventricles of brain

167. Mark the incorrect match w.r.t. cartilage and its corresponding structure in bone.

	Cartilage		Bone
(1)	Chondroclast	–	Osteoclast
(2)	Chondrin	–	Osteon
(3)	Chondroblast	–	Osteoblast
(4)	Chondrocyte	–	Osteocyte

Space for Rough Work

168. Which type of muscles will be having the minimum blood supply?
(1) Smooth muscles
(2) Cardiac muscle
(3) Red skeletal muscles
(4) White skeletal muscles

169. Find the incorrect match
(1) Mucus glands of frog – Simple alveolar gland
(2) Submandibular gland – Simple tubulo-alveolar gland
(3) Goblet cells – Unicellular gland
(4) Crypts of Lieberkuhn – Simple tubular gland

170. Sodium oxalate prevents clotting of blood in vitro by removing which of the following factor?
(1) X (2) IV
(3) I (4) VIII

171. In which of the following muscular part or organ all the fibres contract as separate unit?
(1) Arrector pili (2) Cardiac muscle
(3) Urinary bladder (4) Gastrointestinal tract

172. Mark the tissue which is most primitive, omnipresent and is considered as wear and tear tissue
(1) Muscular tissue (2) Nervous tissue
(3) Epithelial tissue (4) Connective tissue

173. Which junctions facilitate the cells to communicate with each other by connecting the cytoplasm of adjoining cells for rapid transfer of ions and small molecules?
(1) Adhering junction (2) Desmosome
(3) Tight junction (4) Gap junction

174. Mark the incorrect option w.r.t. tissue and typical feature it has
(1) Polymorphic nuclear leucocytes–Lymphocyte
(2) Hard and non-elastic cartilage–Calcified cartilage
(3) Neurons dominate in CNS–Interneurons
(4) Signet ring cell–Adipocytes

175. Mammary glands in humans are modified
(1) Sebaceous glands (2) Columnar glands
(3) Sudoriferous glands (4) Ductless glands

176. Haversian canal are located in
(1) Cancellous bone in human
(2) Compact bone in mammals
(3) All vertebrate bones
(4) Both (1) & (2)

177. Which type of neuroglial cells are involved in the formation of myelin sheath in CNS?
(1) Oligodendrocytes (2) Astrocytes
(3) Neurolemmocytes (4) Schwann cells

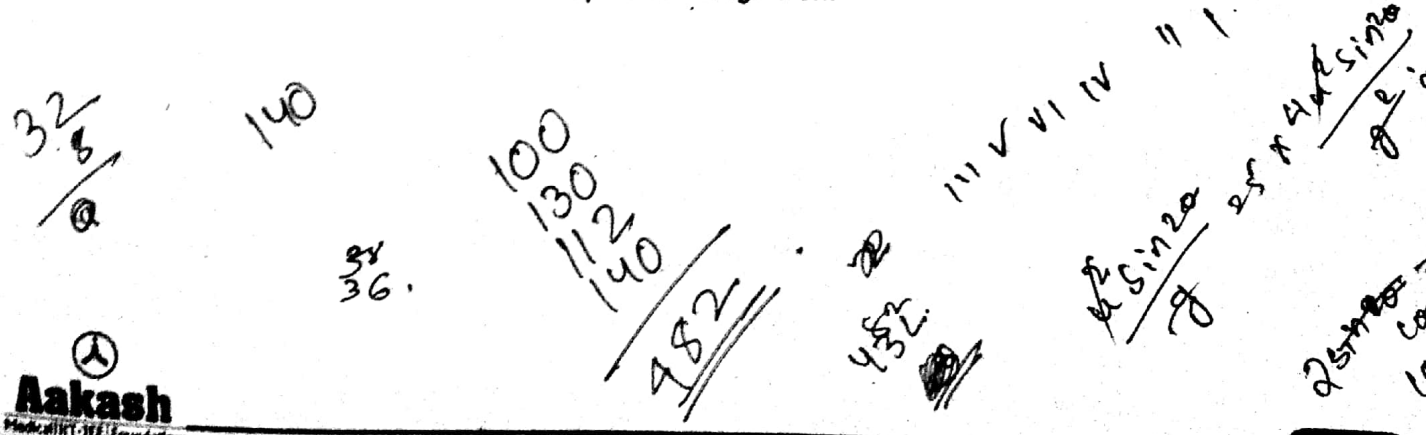
178. Nerve fibres differ from muscle fibres in having
(1) Sarcolemma (2) Dendrites
(3) Myofibrils (4) Striations

179. Major part of matrix in connective tissue is secreted by
(1) Histiocyte (2) Clasmatocytes
(3) Fibroblast (4) Mast cells

180. In a T.S. of nerve following structures are present
I. Myelin sheaths II. Axolemma
III. Epineurium IV. Endoneurium
V Perineurium VI. Fasciculus
Mark the correct sequence (outer to inner side)
(1) I, II, III, IV, V, VI (2) VI, III, V, IV, II, I
(3) III, V, VI, IV, I, II (4) III, V, VI, IV, II, I

❑ ❑ ❑

Space for Rough Work



All India Aakash Test Series for Medical-2017

Click here for Code-C Solution

TEST - 2 (Code-D)

Test Date : 15-11-2015

ANSWERS

1. (2)	37. (1)	73. (3)	109. (4)	145 (4)
2. (2)	38. (3)	74. (4)	110. (4)	146 (1)
3. (4)	39. (2)	75. (2)	111. (4)	147 (1)
4. (4)	40. (1)	76. (4)	112. (3)	148 (3)
5. (2)	41. (4)	77. (4)	113. (1)	149 (2)
6. (1)	42. (2)	78. (4)	114. (3)	150 (2)
7. (4)	43. (3)	79. (3)	115. (3)	151 (4)
8. (Deleted)	44. (4)	80. (4)	116. (2)	152 (2)
9. (4)	45. (3)	81. (1)	117. (1)	153 (1)
10. (3)	46. (2)	82. (4)	118. (2)	154 (1)
11. (3)	47. (3)	83. (3)	119. (4)	155 (1)
12. (1)	48. (3)	84. (4)	120. (2)	156 (4)
13. (4)	49. (1)	85. (1)	121. (1)	157 (1)
14. (1)	50. (3)	86. (2)	122. (2)	158 (1)
15. (4)	51. (1)	87. (4)	123. (1)	159 (2)
16. (2)	52. (3)	88. (3)	124. (2)	160 (2)
17. (1)	53. (3)	89. (3)	125. (1)	161 (3)
18. (4)	54. (2)	90. (4)	126. (1)	162 (3)
19. (4)	55. (3)	91. (2)	127. (4)	163 (1)
20. (4)	56. (4)	92. (3)	128. (1)	164 (2)
21. (1)	57. (2)	93. (2)	129. (3)	165 (4)
22. (3)	58. (3)	94. (4)	130. (2)	166 (4)
23. (4)	59. (4)	95. (4)	131. (1)	167 (2)
24. (1)	60. (3)	96. (1)	132. (2)	168 (1)
25. (3)	61. (1)	97. (2)	133. (4)	169 (2)
26. (3)	62. (3)	98. (2)	134. (1)	170 (2)
27. (4)	63. (1)	99. (1)	135. (2)	171 (1)
28. (2)	64. (3)	100. (2)	136 (2)	172 (3)
29. (3)	65. (4)	101. (4)	137 (4)	173 (4)
30. (4)	66. (3)	102. (1)	138 (4)	174 (1)
31. (1)	67. (1)	103. (4)	139 (2)	175 (3)
32. (Deleted)	68. (2)	104. (3)	140 (3)	176 (2)
33. (4)	69. (3)	105. (1)	141 (2)	177 (1)
34. (1)	70. (3)	106. (2)	142 (3)	178 (2)
35. (4)	71. (2)	107. (4)	143 (2)	179 (3)
36. (4)	72. (4)	108. (3)	144 (4)	180 (3)